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NanoTech: The Next Big Boom?

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SAN JOSE, Calif. -- For college graduates in the 1960s, like the fictional Benjamin Braddock of 'The Graduate' fame, the buzzword for a better future was 'plastics.'

Today, in the Silicon Valley, the new buzzword is 'nanotechnology.' A word not quite as easy to roll off the tongue as plastics nor is it as easy to explain.

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- Nanotech: Visions Of The Future Of Medicine

Nanotechnology is the creation and building of things at the molecular level just as it's name implies. Nano, you see, is a measurement of a billionth of a meter -- approximately the size of a DNA molecule.

"One easy way (to explain it)," said Jim Hurd, the founder of the Nanoscience Exchange. "Is we are building things one molecule -- one atom -- at a time."

Nanotech: Visions Of The Future Of MedicineScience fiction visions of nanotechnology have been around a long time. The 1960's movie 'Fantastic Voyage' showed a medical crew shrunk down to molecular size and injected into a human body. Their mission was to destroy a life-threatening blood clot in the brain of a famed researcher.

Proponents of Nanotechnology say products that work at the molecular level are no longer science fiction. Some exist, but they are not to the 'Fantastic Voyage' stage yet.

Hurd recently appeared before a group of U.S. Senators, trying to convince them to investment more money in nanotechnological research. He was wearing chinos that had been treated with a product developed through nanotechnology.

To prove his point, he dumped grape juice on his pants. They did not stain.

"The senators found this to be a real 'wow' (factor)," he said. "How do business people understand this kind of stuff? This kind of a practical example is something they get."

It was a remarkable achievement when scientists first manipulated molecules in the 1990s. But it's now 2003 and critics want to know where are the truly innovative products.

Well, one could be a new super sensitive chemical sensor being developed by Nanomix in Emeryville.

Nanomix says it can make sensors that detect potentially dangerous chemicals at the molecular level. To build the sensors, the company first creates incredibly

strong carbon molecule tubes called 'nanotubes'.

Scientists fill the tube with what they call -- 'secret ingredients' -- and then attach electronic wiring to it to create an extremely small transistor. Such a device would be invaluable at refineries where it could sniff out leaks look before they can be detected using current technology.

The company said it plans to have the sensor on the market by mid-year.

Up the road in Richmond, scientists at Chevron-Texaco recently discovered a new class of molecules in petroleum that have the same internal structure as diamonds.

They have named these molecules -- 'higher diamondoids.'

"It was more of a scientific curiosity," said Chevron Texaco's Jeremy Dahl. "It was 'wow' these are in there. They are pretty interesting molecules." Higher diamondoids are a major discovery because -- like nanotubes -- they have the size and shape to be used as building blocks.

"The type of products you could think about would be electronic and micro-electronic related components," said Wagar Qureshi, the company's molecular diamond technologies director.

The diamond-like strength could be used to develop coatings for rockets, satellites or transportation vehicles.

But for all its promise, Hurd says California is falling behind other states in supporting nanotechnology. Nationally, the U.S. may be slipping behind Germany, Japan and other countries.

U.S. Representative Mike Honda is concerned. He says the $710 million earmarked for nanotech this year by the federal government is a nice start. But it's just that -- a start.

"If you just say 'This is what we want to do, but you don't appropriate money for it, then it's just talk,'" Honda said.